

The International Science and Politics of Depleted Uranium



Colonel Mark A. Melanson, Ph.D., CHP

Director

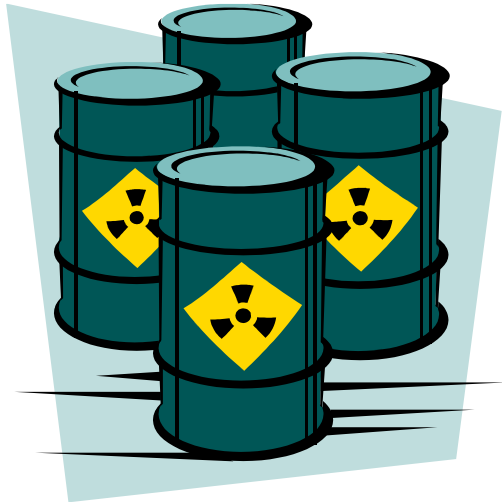
Armed Forces Radiobiology Research Institute

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Objectives

- **Trace the ongoing history of the international debate on the safety and acceptability of the military uses of depleted uranium**
- **Review the various conclusions by international scientific bodies such as the World Health Organizations, the International Atomic Energy Agency, and the United Nations Environment Programme**
- **Present the lines of argument presented by various activist and political organizations that oppose the military use of depleted uranium, along with their strengths and weaknesses**

D.U.



OR



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A Nearly Two Decade Long Struggle



How I got Involved: A Sobering Story

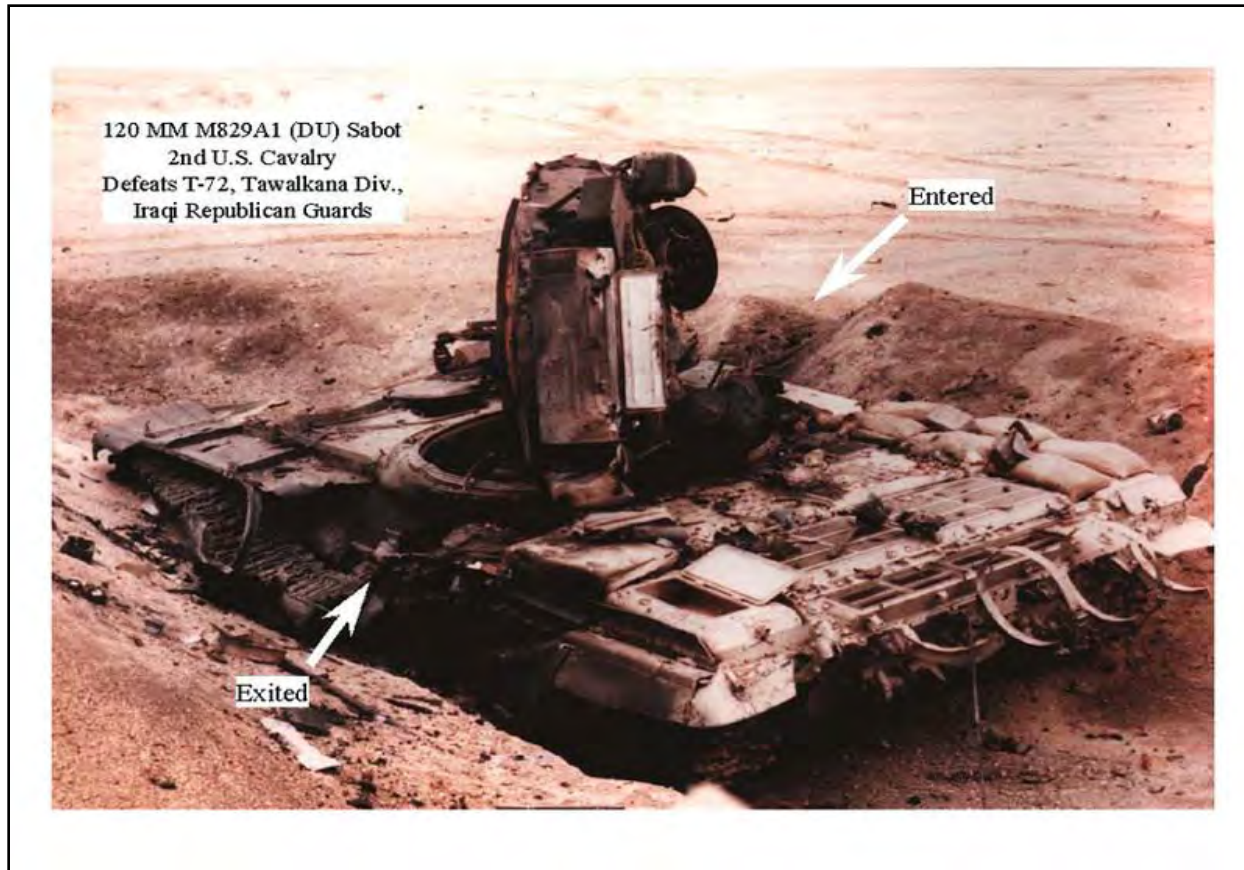


Talk Outline

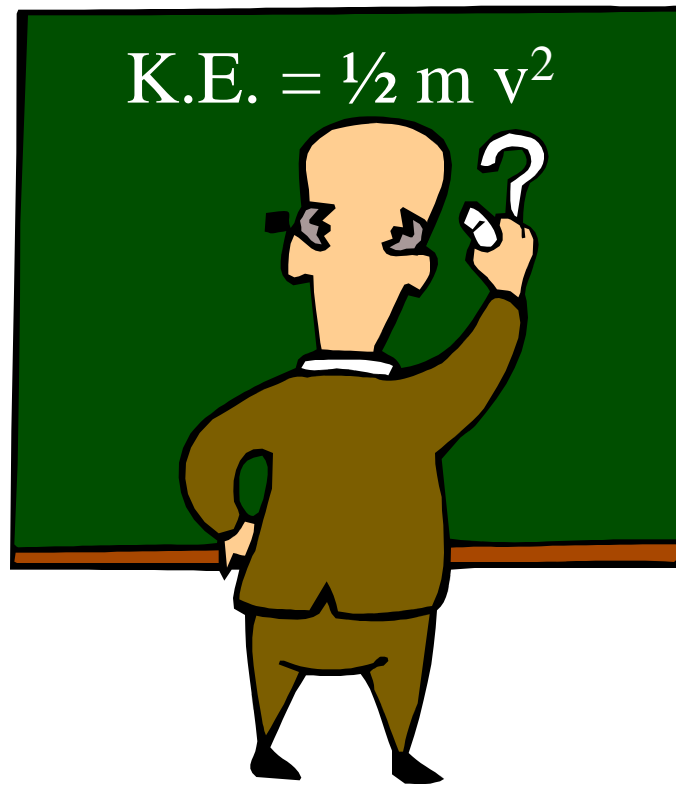
- Military Uses of Depleted Uranium (DU) (Primer and Chronology)
- International Science of DU
- International Politics of DU



The Military Uses of Depleted Uranium



Military Depleted Uranium Primer



Depleted Uranium Properties

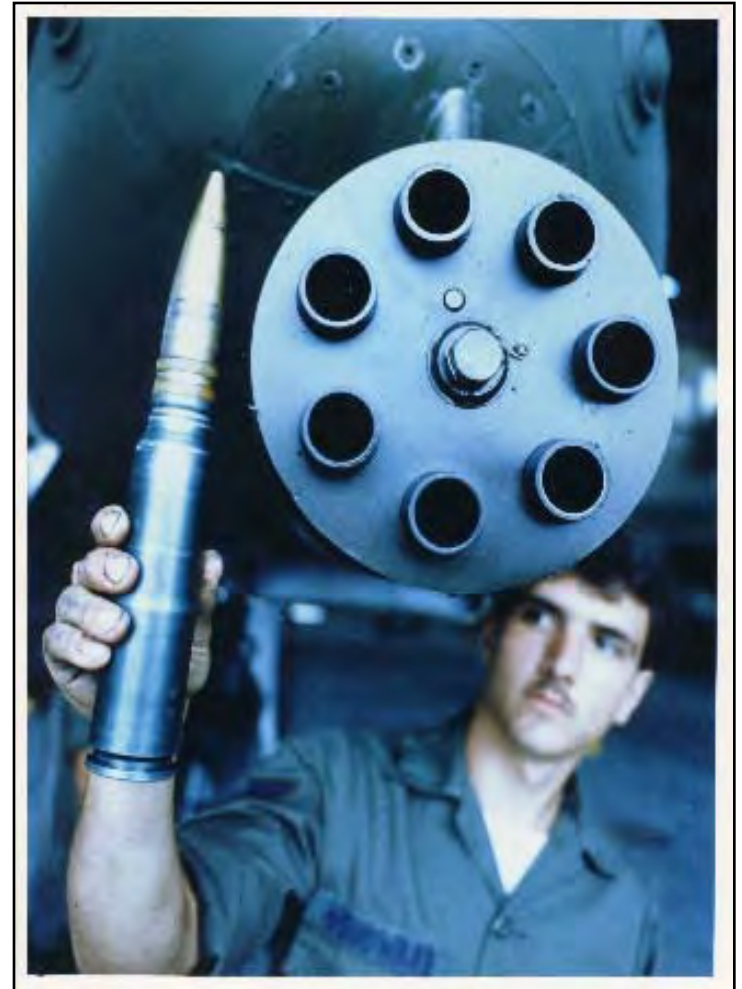
- Radioactive heavy metal
- 40 % less radioactive than natural uranium
- Self-sharpening (adiabatic shearing)
- Density: 70% more dense than lead (Pb)
- Pyrophoric
- Trace impurities: fission products, transuranics (TRUs) and U-236

The First Military Use of DU

- Davy Crockett Tactical Nuclear Weapon
- Developed during the 1950s, fielded in the 1960s
- Depleted Uranium used as a spotting round
- Army units trained with it worldwide



Depleted Uranium on Offense

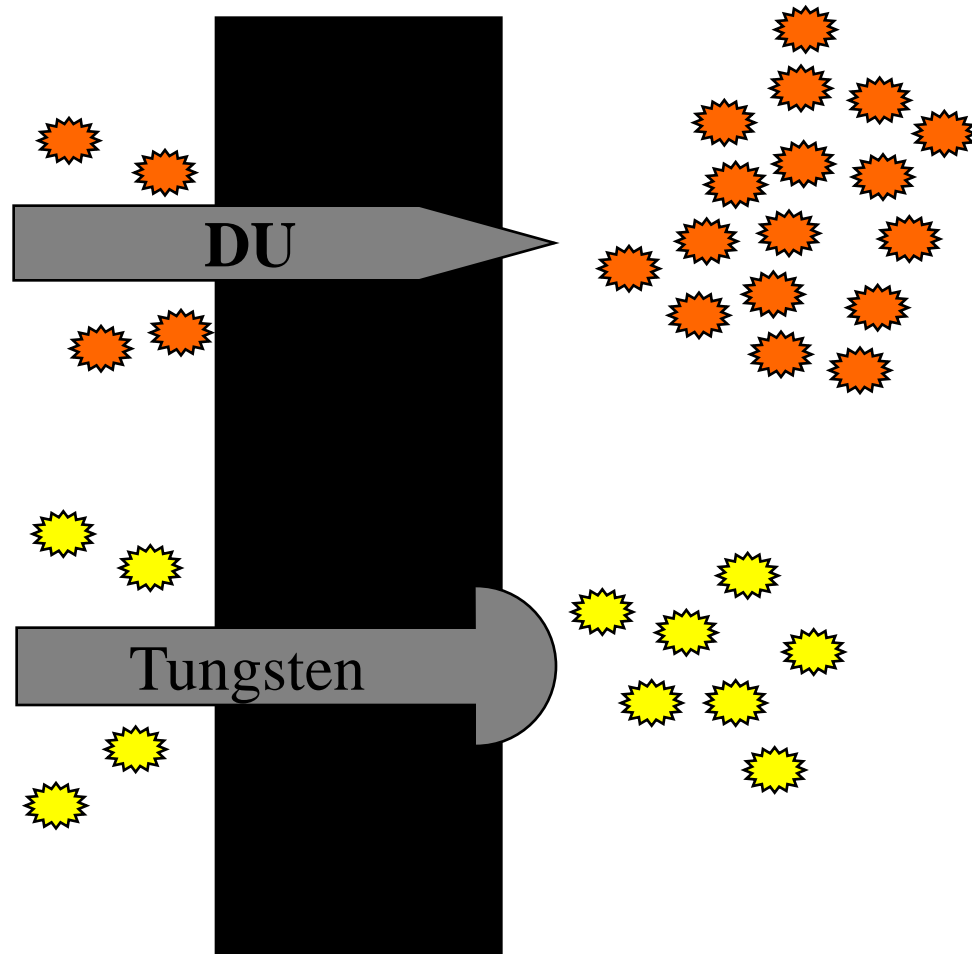


DU Metallurgic Properties

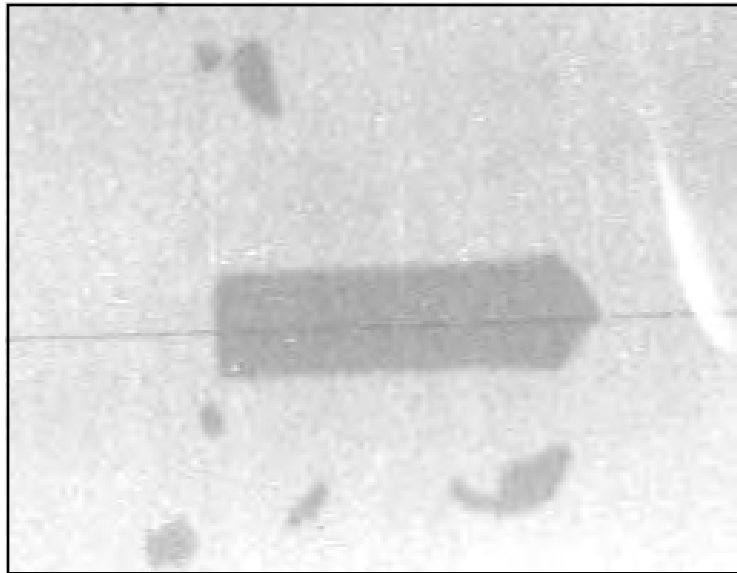
Outside

Armor

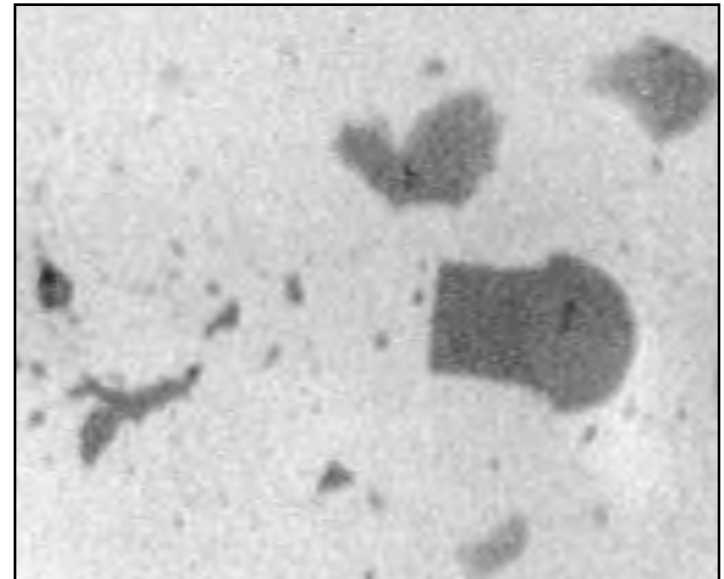
Inside



Behind-Armor X-ray Images of DU and Tungsten Penetrators

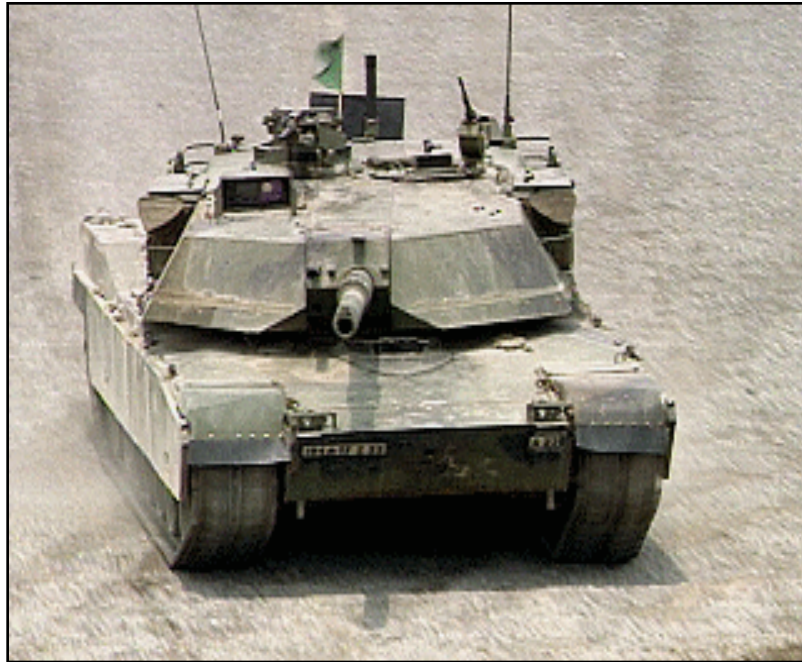


DU



Tungsten

Depleted Uranium on Defense

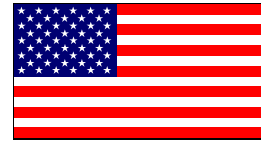


Chronology of the Combat Use of Depleted Uranium



Operation Desert Storm

- Iraqi invasion of Kuwait on August 2nd, 1990
- Liberation of Kuwait in 1991
- Large and small caliber DU munitions



Operation Deliberate Force

- 1995 - 1996
- Ethnic Cleansing by Bosnian Serb forces
- NATO Airstrikes
- Small caliber DU munitions



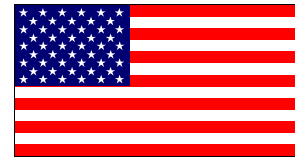
Operation Allied Force

- 1999
- Ethnic Cleansing of Kosovar Albanians by Serb forces
- NATO Airstrikes in Kosovo, Serbia, and Montenegro



Operation Iraqi Freedom

- 2003
- Invasion of Iraq
- Large and small caliber DU munitions used in early phases of the war

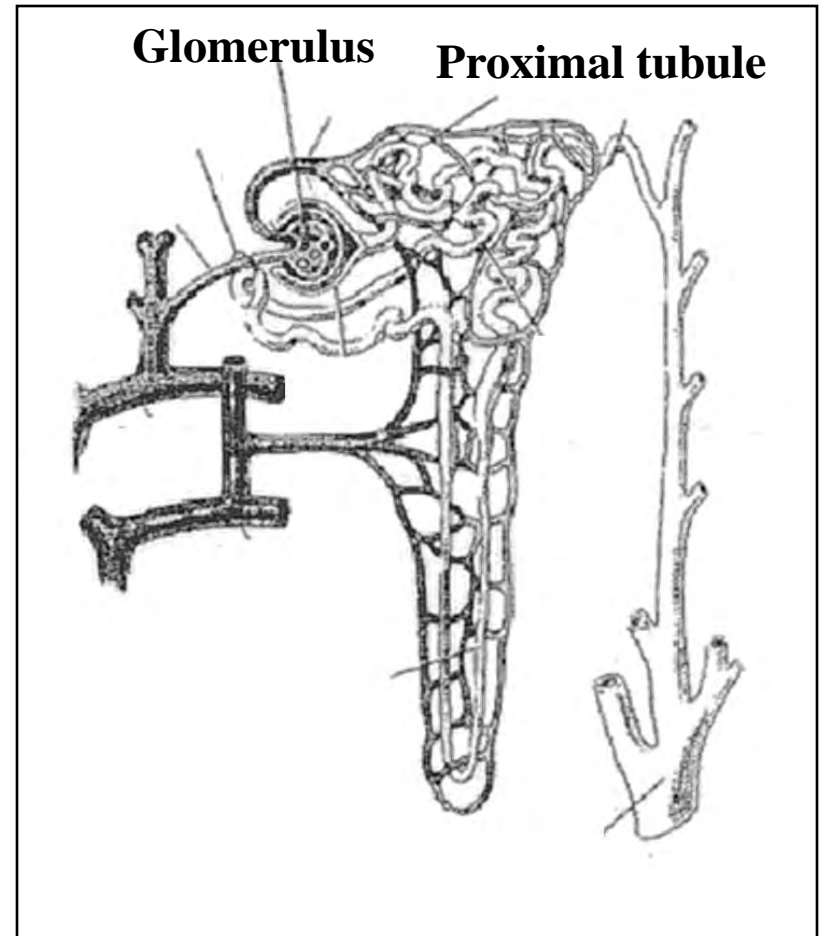


The Science of Depleted Uranium



DU Health Effects

- DU is a radioactive heavy metal
- Health concerns about DU predominately relate to its chemical properties as a heavy metal rather than to its low radioactivity
- The kidney is the target organ for chemical toxicity (soluble forms)
- The lung is the target organ for radiological concerns (insoluble forms)



Depleted Uranium Radiation Risks

- Radiogenic risk with no assumed threshold
- Risk linearly proportional to the radiation dose



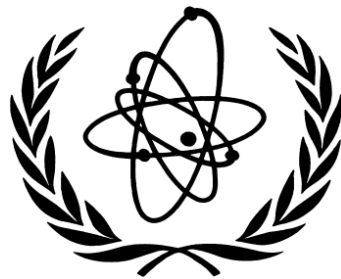
The National Science



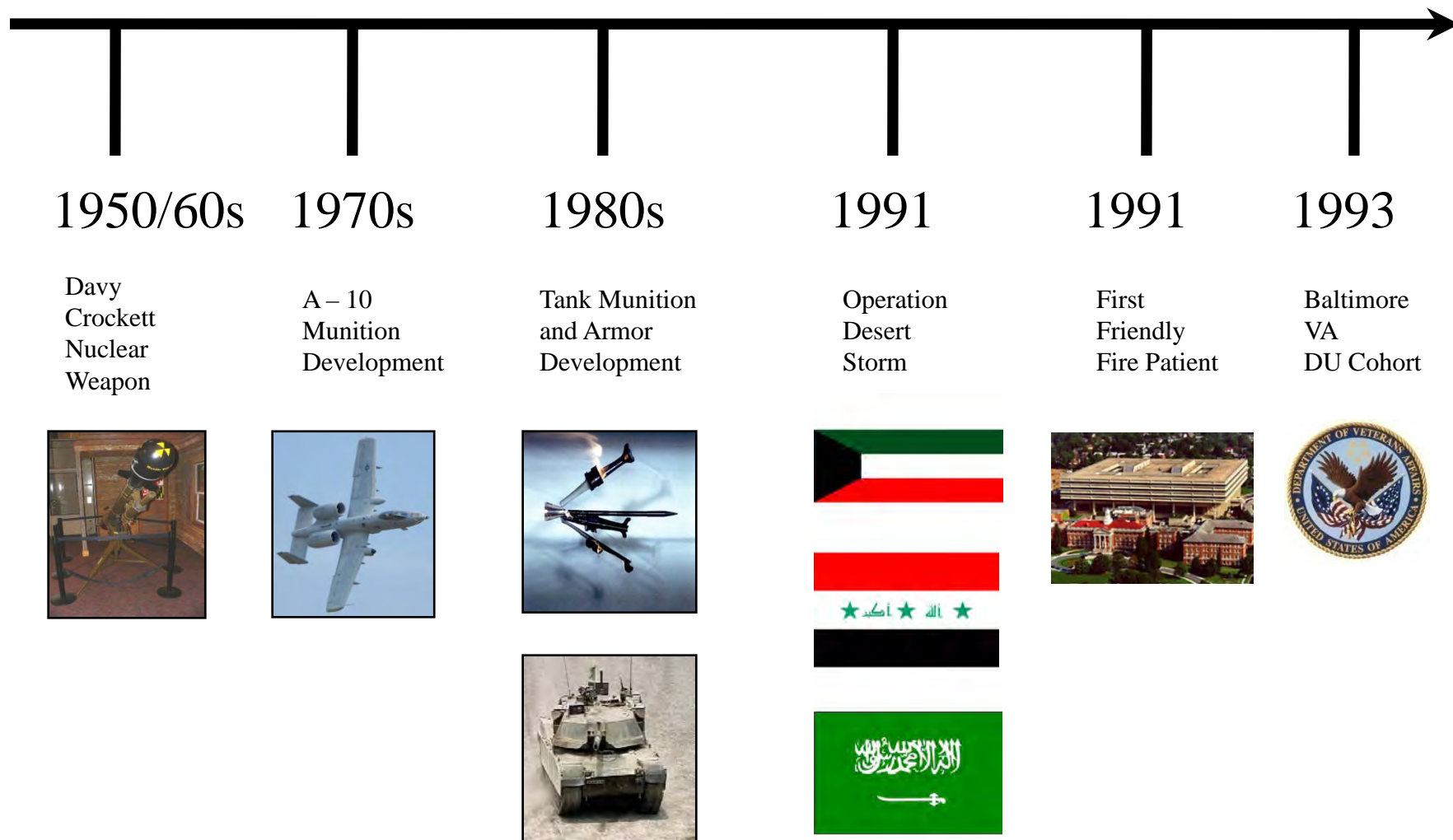
ATSDR



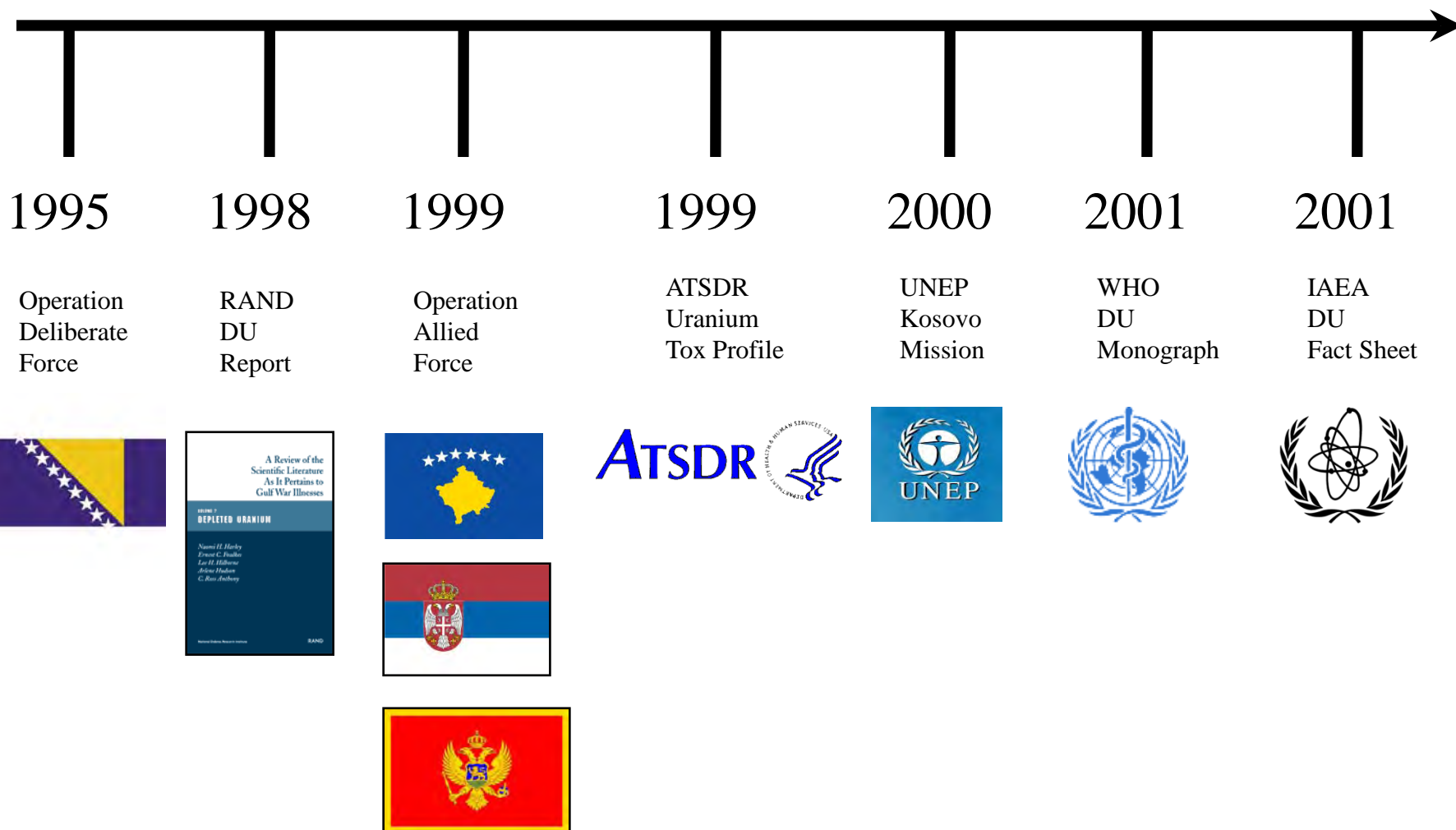
The International Science



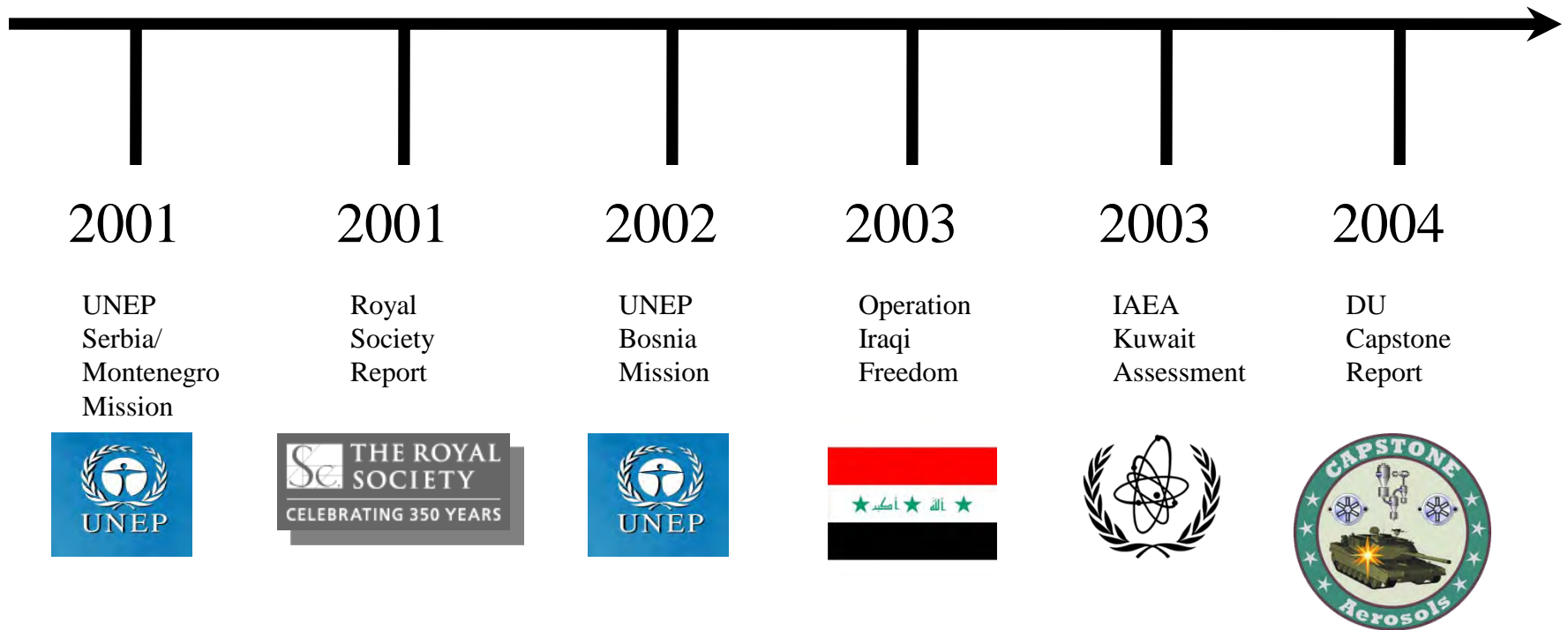
Depleted Uranium Timeline



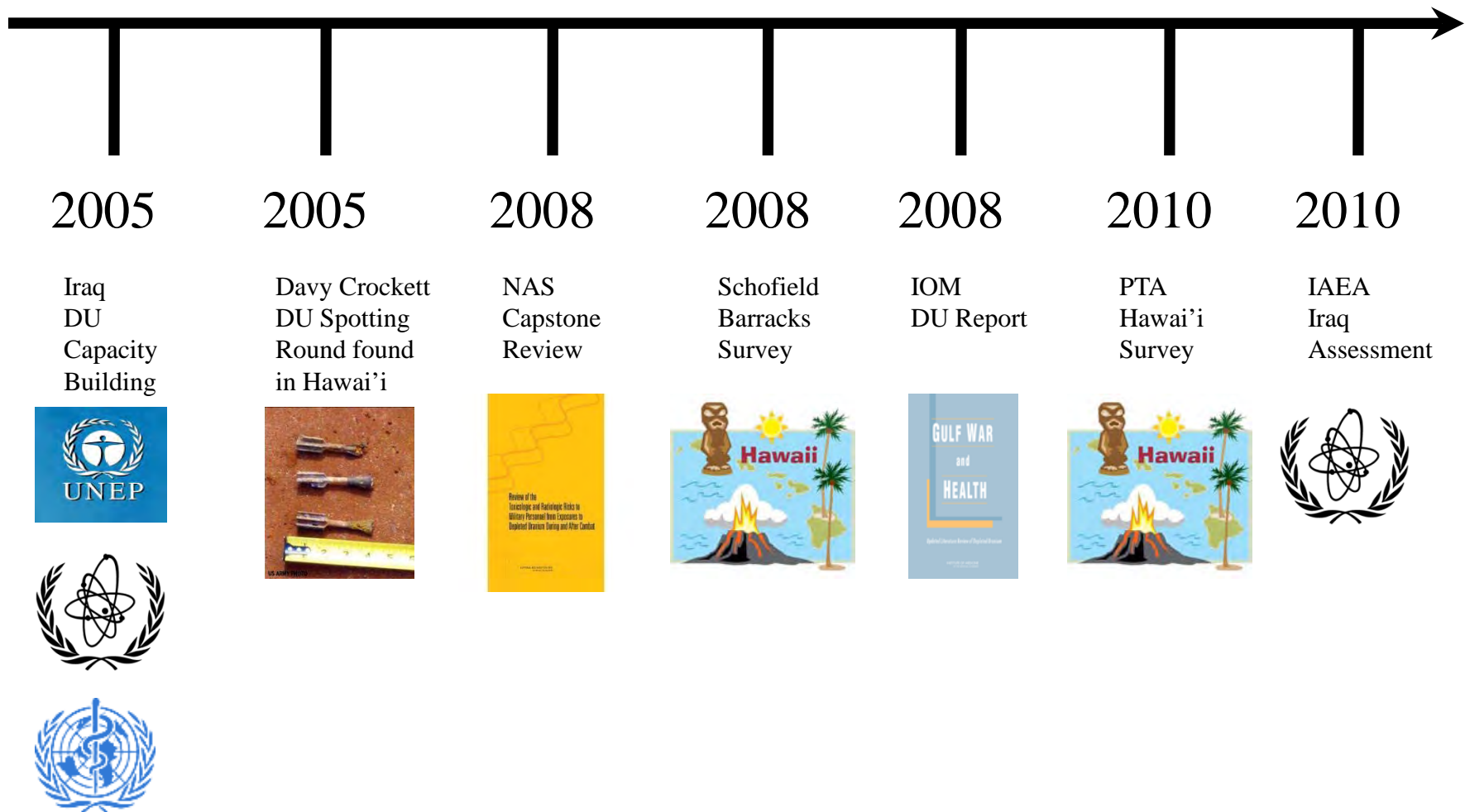
Depleted Uranium Timeline



Depleted Uranium Timeline



Depleted Uranium Timeline



Environmental Assessments



Summary of Environmental Assessments

Location	Year	Organization	Dose	Conclusions
Kosovo	2001	UNEP	< 100 mrem	The corresponding radiological and chemical risks from all points of view are consequently insignificant
Serbia & Montenegro	2002	UNEP	< 100 mrem	The corresponding radiological and chemical risks are insignificant
Bosnia & Herzegovina	2003	UNEP	< 100 mrem	The amount of DU at the contamination points was too low to cause any radiological or chemical problems, either now or in the future

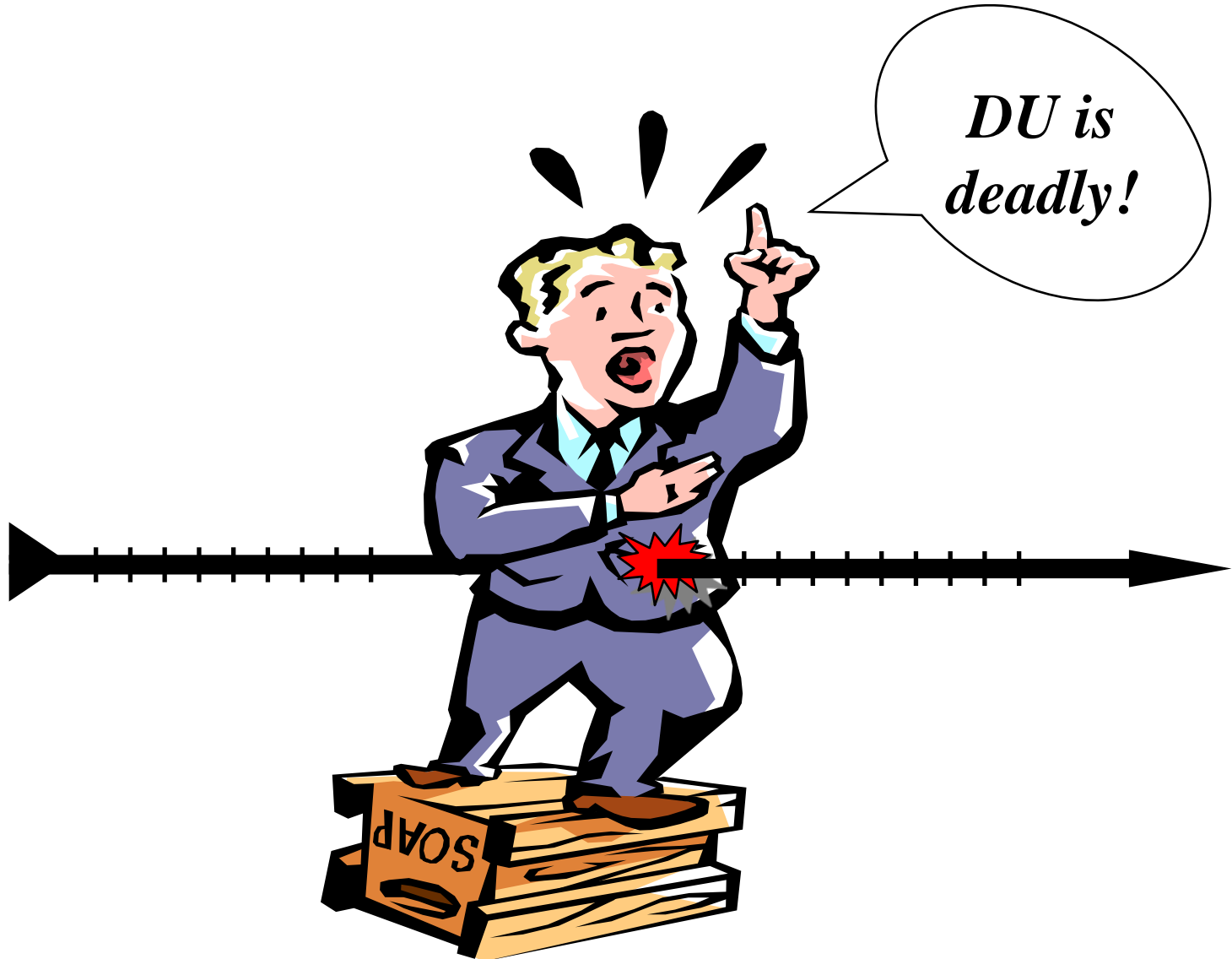
Summary of Environmental Assessments

Location	Year	Organization	Dose	Conclusions
Schofield Barracks, Hawai'i	2008	Cabrera	3 mrem/y	These results for non-carcinogenic risks indicate that there are no adverse impacts expected due to chemical exposure to DU.
Iraq	2010	IAEA	0.1 mrem/y	The radiation doses from DU do not pose a radiological hazards to the populations as the four studied locations

Summary of Environmental Assessments

Location	Year	Organization	Dose	Conclusions
Pohakuloa Training Area, Hawai'i	2010	Cabrera	4×10^{-4} mrem/y	<p>the presence of DU in soil at the PTA results in chemical risk well below the limits that the USEPA considers safe.</p> <p>the presence of DU in PTA soil results in radiological risk well below the limits that the USEPA considers safe.</p>

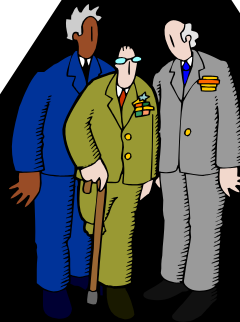
The Politics of Depleted Uranium



The National Politics of Depleted Uranium



The National Politics of Depleted Uranium



Executive Branch

- Presidential Advisory Committee on Gulf War Illnesses
- Office of the Special Assistant for Gulf War Illnesses



Depleted Uranium Enters the 2008 Presidential Race

- As President, I will order an end to the United States' illegal use of depleted uranium munitions and will lead an international effort to recover depleted uranium. I will promote environmental remediation. Also, I will develop a program to provide care and restitution for people suffering as a result of the United States' use of depleted uranium munitions, nuclear weapons, nuclear weapons production, nuclear testing, and uranium mining. –

**Congressman Denis Kucinich,
Democrat, 10th District, Ohio**



Congress

- Various legislation
- 11 Congressional Office Calls



State Legislatures Considering Laws



Legal Matters

- Veteran claims against the U.S. Government barred by The Federal Tort Claims Act
- Feres Doctrine
- No successful legal challenges



Activists – National





VETS HELPING VETS SINCE 1974



Military Toxics Project

Traprock Peace Center

American Gulf War
Veterans Association



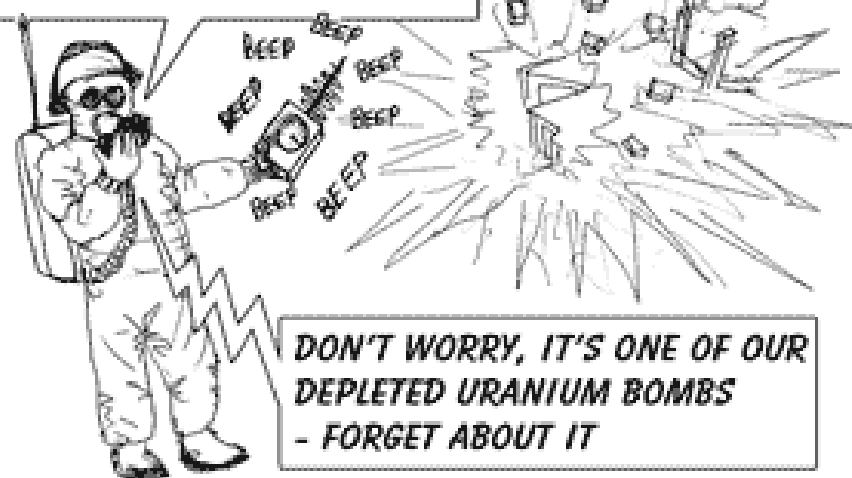


OF CLEAN, SURGICAL WARS AND GULF WAR SYNDROMES

**WARNING: SMOKING THE ENEMY
MAY BE HAZARDOUS TO YOUR HEALTH.**



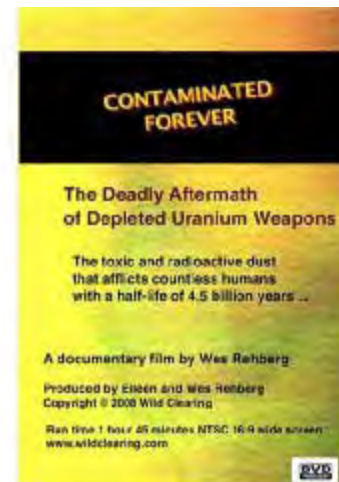
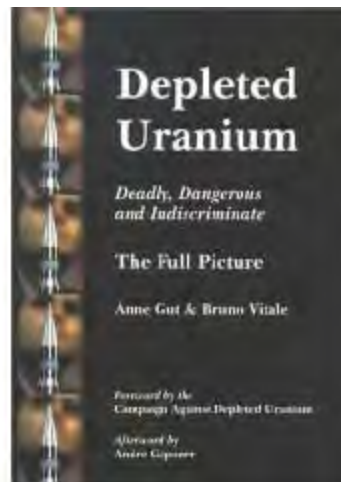
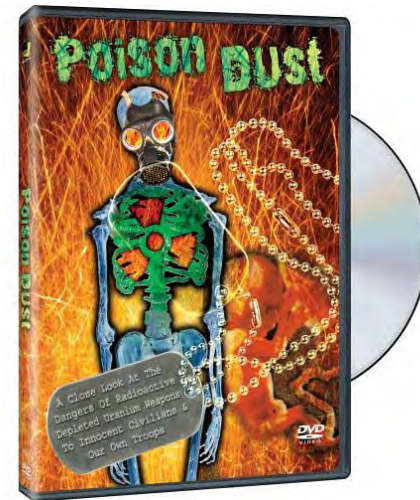
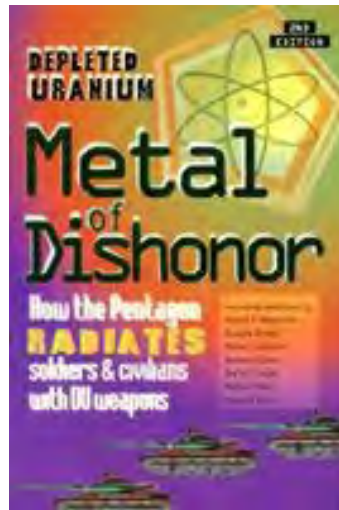
**SARGE - THE GEIGER COUNTER'S
GOING MAD - I THINK WE'VE
GOT SADDAM'S WMD**







“Popular Junk Science”



The International Politics of Depleted Uranium

- **EU Resolution (2008)**
- **A halt to deployment of military and civilian personnel to areas where DU has been used**
- **Member states to provide inventory recording the use of DU**
- **Launch scientific studies into the health impacts of DU where it has been used**
- **Moratorium on the use of DU**
- **Call for an international ban of the military use of depleted uranium**

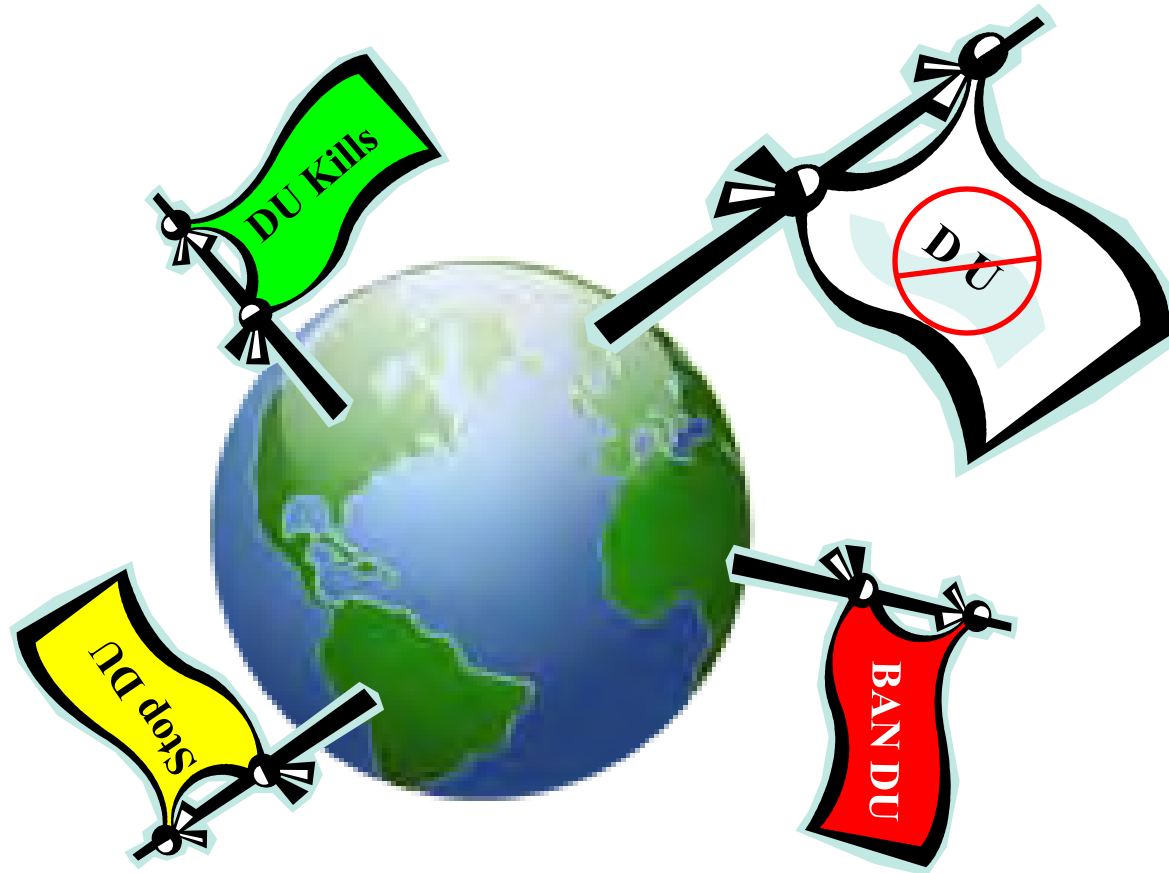


The International Politics of Depleted Uranium

- UN Subcommision on Prevention of Discrimination and Protection of Minorities – DU a violation of human rights and WMD (1996)
- UN First Committee voted in favor of a resolution highlighting serious health concerns about DU at the UN General Assembly (December 2007)
- UN First Committee voted on 29 October 2010 to require users of DU to report on areas where they have used it



Activists – International





Campaign Against Depleted Uranium



Uranium Medical Research Centre

Gutta Lapidem Cavat

A Drop of Water
Wears Away the Rock



ICBUW

International Coalition to Ban Uranium Weapons

GREENPEACE



IACenter.org

FOUNDED IN 1992 BY RAMSEY CLARK
INTERNATIONAL ACTION CENTER

Information, activism & resistance to U.S. militarism, war & corporate greed, linking with struggles against racism & oppression within the United States

Scientist versus Activist



According to Webster

Science

“The observation, identification, description, experimental investigation, and theoretical explanation of natural phenomena.”

Activism

“A theory or practice based upon militant action.”

Militant – “Combative in service of a cause.”

According to Melanson ...

Scientist

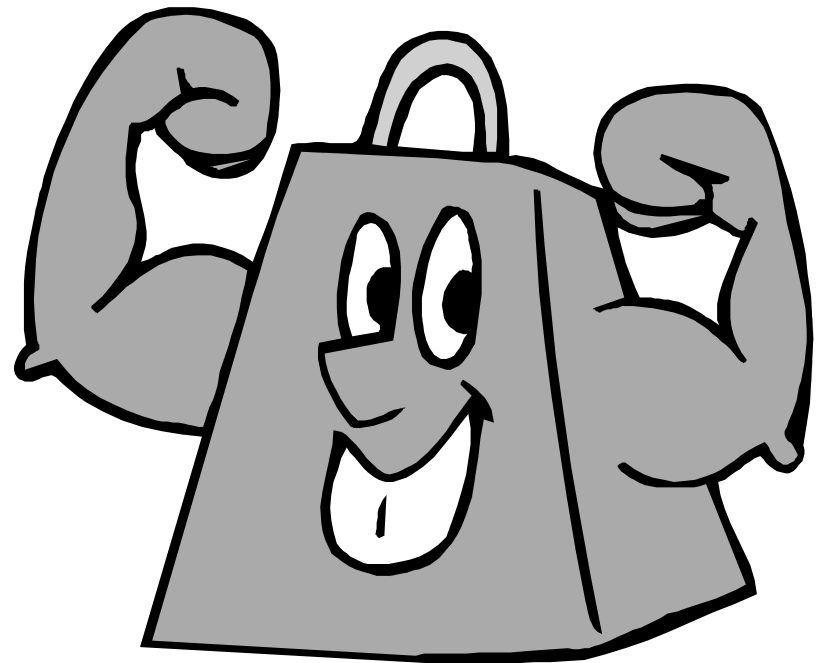
- Starts with a hypothesis
- Begins with what is known
- Considers all data
- Open-minded
- Skeptical
- Willing to consider the possibility that he or she is wrong

Activist

- Starts with a cause
- Begins with what is unknown
- Selective use of data
- Closed-minded
- Suspicious
- Unwilling to consider the possibility that he or she is wrong

The Activists' Strengths

- The power of the internet
- Ask the same question to different parts of the Defense Department
- “The Pentagon has lied before ...”
- Cite each other's websites
- Uniqueness: “DU + Anthrax Vaccine + Diet Soda + Flea Collars + Stress = Gulf War Illness
- Demand proving the negative – That DU does not cause these illnesses



The Activists' Weaknesses

- Half a century of international peer reviewed scientific research on the health effects of uranium (to include depleted uranium)
- The dose makes the poison
- Uranium is a weak carcinogen
- There are safe levels of depleted uranium
- Maximally exposed individuals (in breached tanks) are still below safety limits (excluding fragments)
- Individuals with the highest exposures are not experiencing any of the health effects claimed
- Uranium is ubiquitous - all of us have natural uranium in our bodies

Some Activist Quotes

- “DU was used in Iraq, Soldiers were in Iraq, Soldiers are sick, DU made the soldiers sick”
- “DU is more dangerous than natural uranium”
- “1 atom of DU will kill you”
- “DU is more dangerous the further you are from the source”
- “Depleted uranium is nuclear waste”
- “U.S. is using natural uranium in weapons to avoid detection”

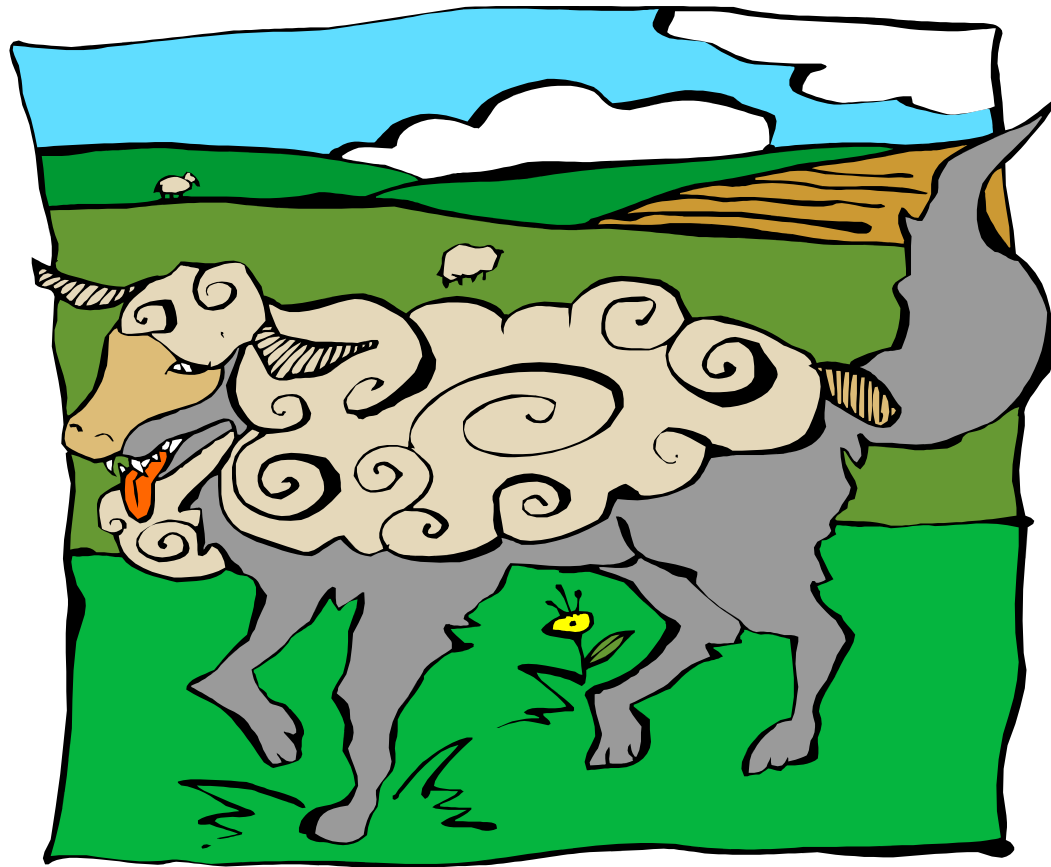
Some Actual Quotes

- “Depleted Uranium is poisoning our planet”
- “American soldiers are showing signs of depleted uranium poisoning”
- “Depleted Uranium is silently killing tens of thousands of soldiers and millions of civilians in the middle east”
- “Nothing depleted about depleted uranium”

More Actual Quotes

- “Most of our soldiers returning from these countries will ultimately come down with a fatal case of Depleted Uranium poisoning”
- “Depleted uranium turns to poison gas”

The Diehard Activist in “Reasonable Skeptic’s” Clothing



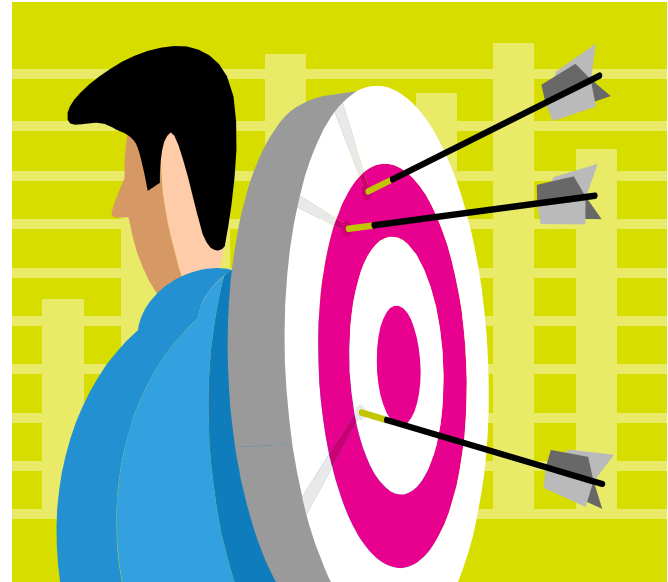
The Price of Standing up for the Truth

“Dr. Mark Melanson ...

specializes in
discrediting the DU
radiation activists”*

“I was shocked by Dr.
Mark’s blatant lies”*

“Tobacco industry hired-
gun”*



* *Haleakala Times* – December 4th, 2007

What I Actually Do ...



The Press

- Rediscovered the issue periodically
- “Aha ... the cause of Gulf War Illness!”
- Wants “both sides of the issue”
- Sound bites and images rather than science
- “DU poisoning causes nausea, vomiting ...”





The New York Times

DAILY NEWS
NYDAILYNEWS.COM



honolulu**advertiser**



AP Associated Press

Daily Press

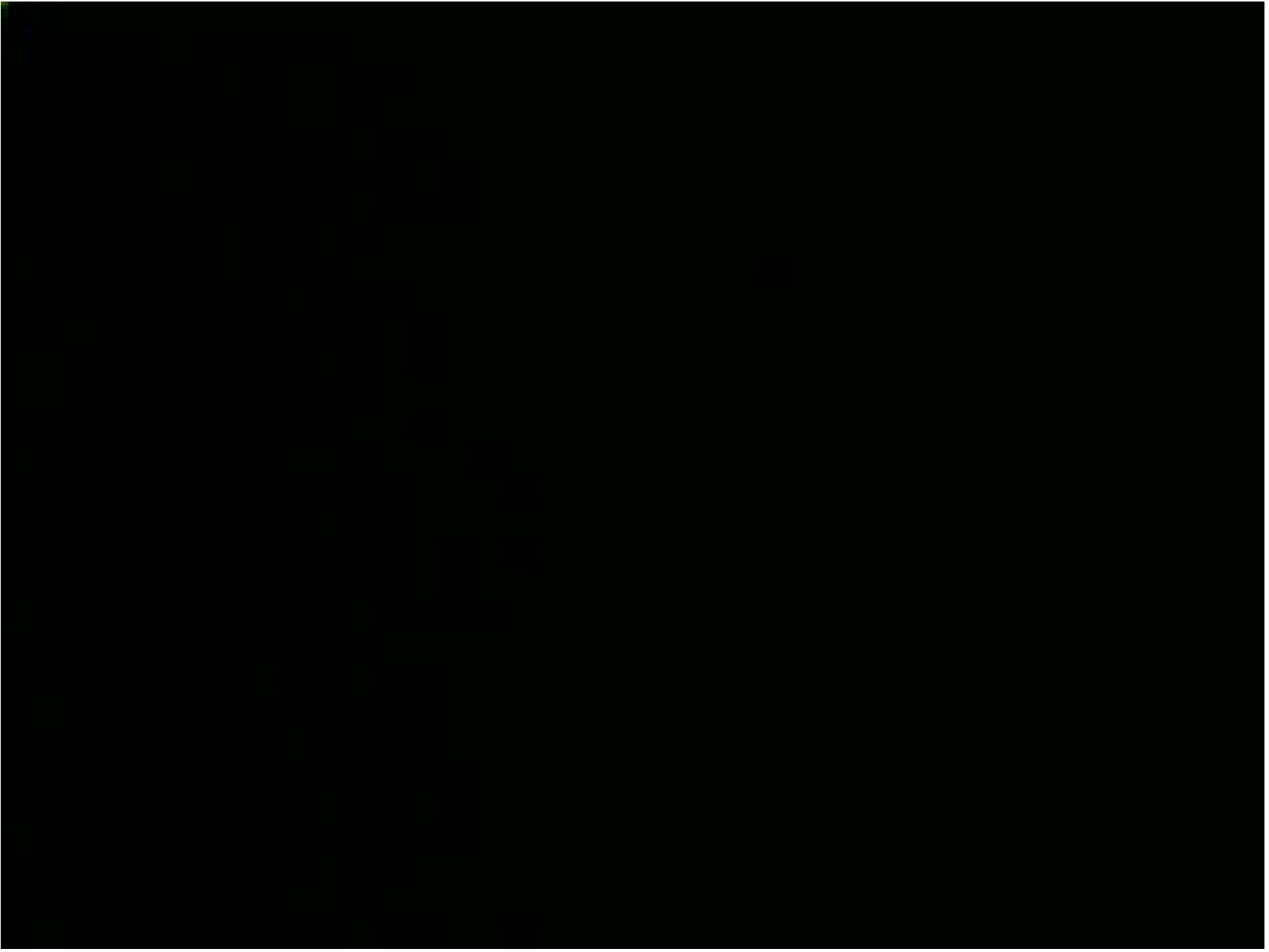
American Forces Press Service

Hartford Currant

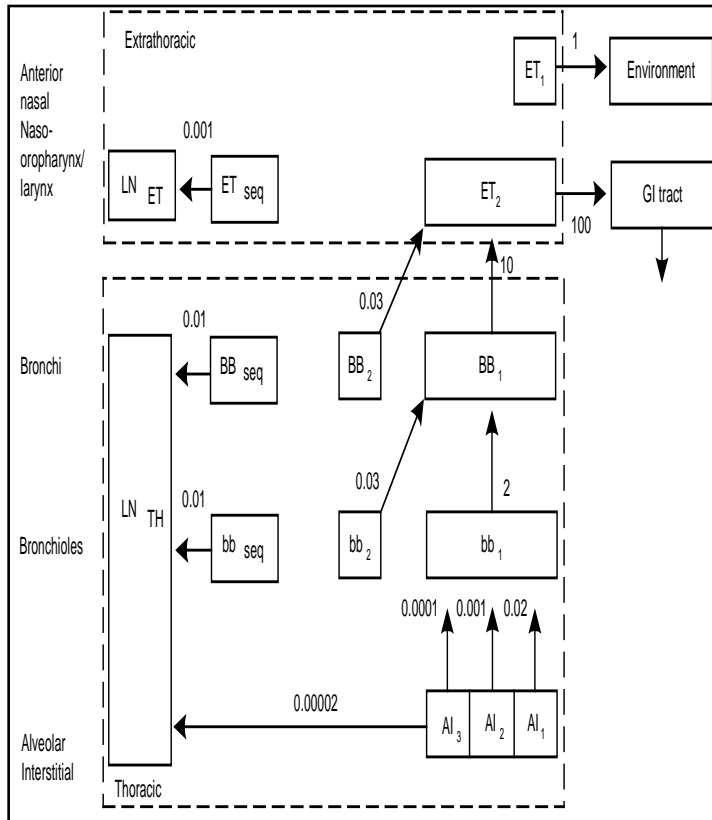


They Always Show Your Best
Side





No Competition



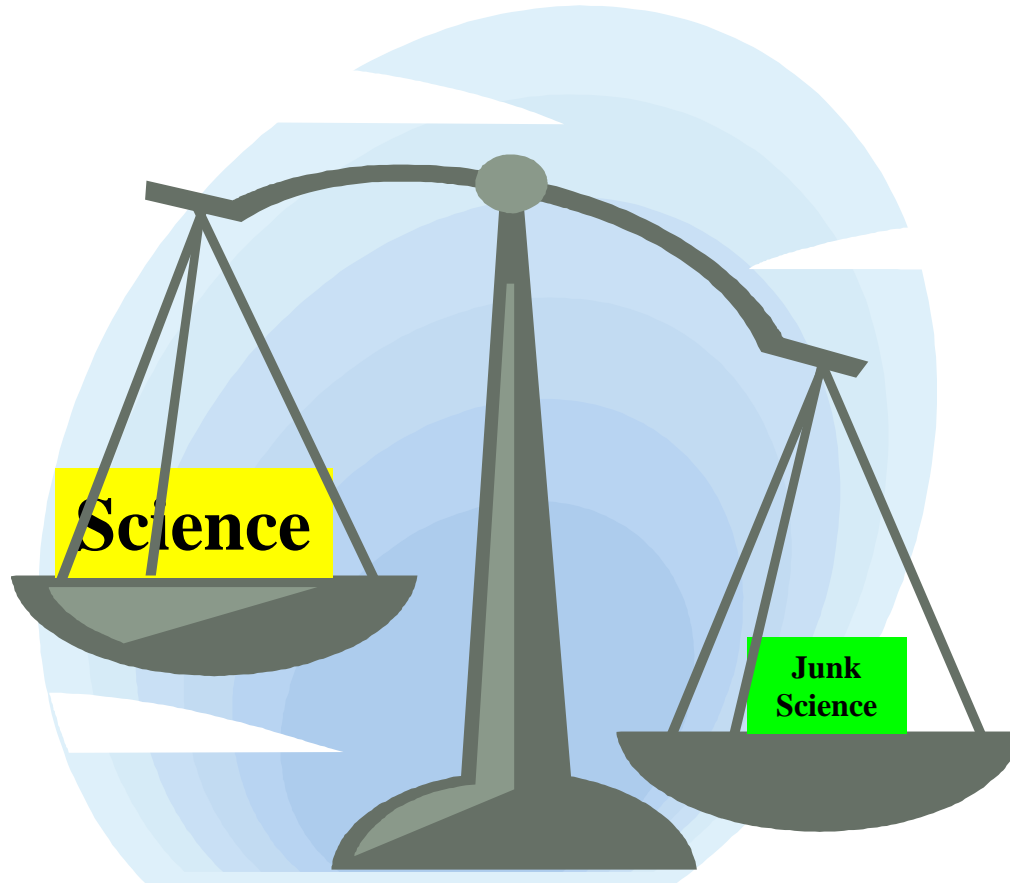
ICRP Lung Model

VS.



Internet Images

The Sad Reality



The Big Disconnect

Science

Depleted uranium has been studied for a half a century and DU's health effects are well understood. It is a mildly radioactive heavy metal for which there are safe levels of exposure.

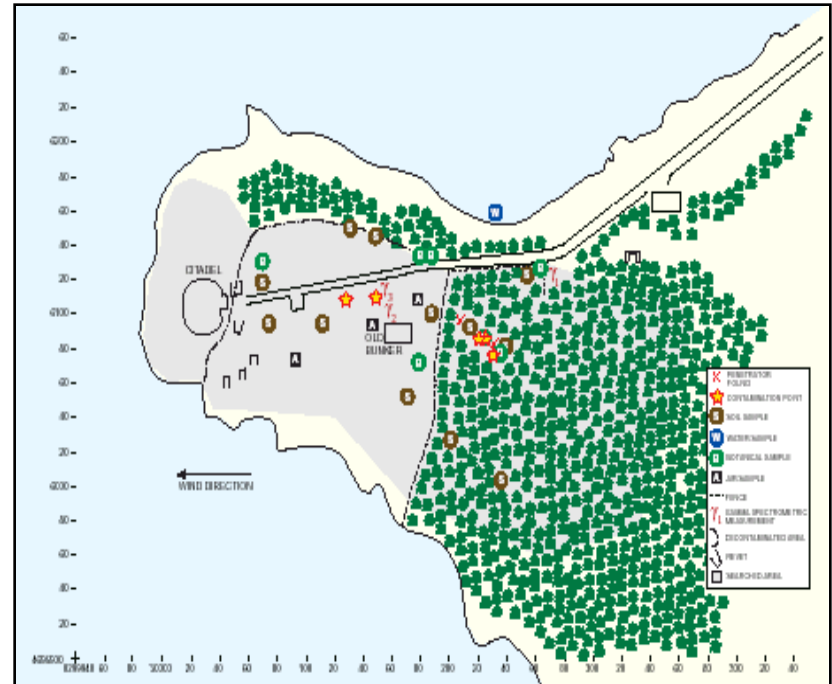
Politics

Stop using depleted uranium immediately. We do not understand its health effects and more scientific research is required.

The Absurdity of DU Risk Perception



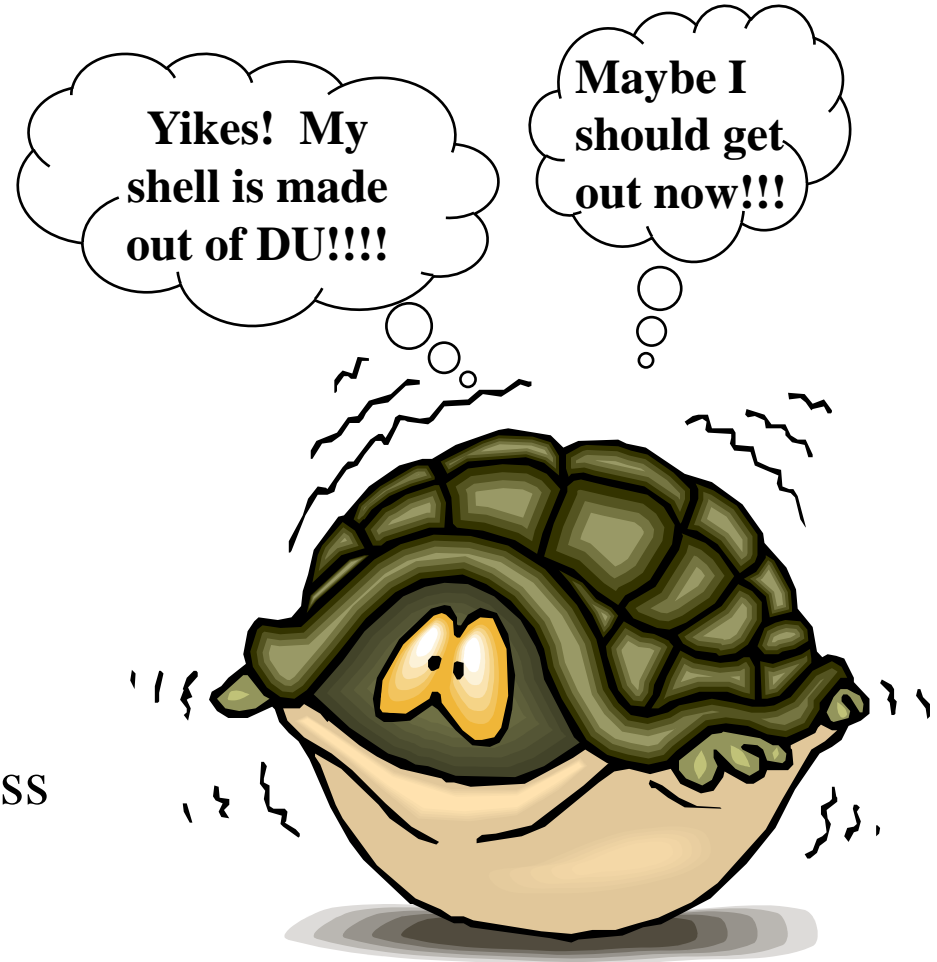
Risk Imbalance



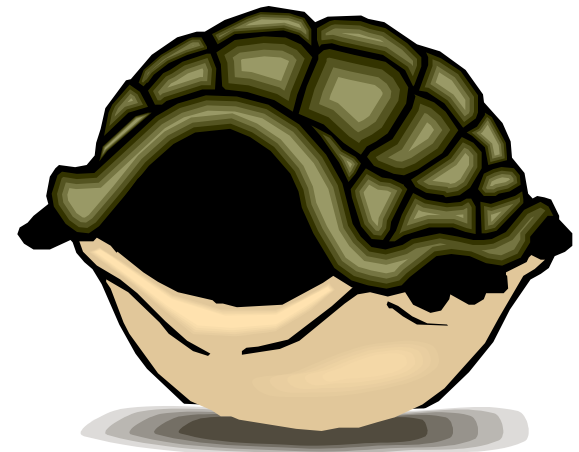
Eco-Devistation

Other Hidden Consequences

- Failure to identify true causes (if health claims are true)
- Unwarranted fear and anxiety
- Misdirected resources
- Selecting alternative materials that may be less effective and more hazardous



A Bad Risk Management Decision



Why is DU so Controversial?

- Radiation
- Gulf War Illnesses
- The military nature of its use
- Propaganda
- The superiority of DU over alternative materials
- Anti-U.S. Sentiment

For Those of You Who are Conspiracy Theorists

Question: “How do you
defeat the best Military
in the world?”

Answer: “By making its
soldiers afraid of their
weapons and distrustful
of their leaders.”



Depleted Uranium: A Case Study of Good and Evil

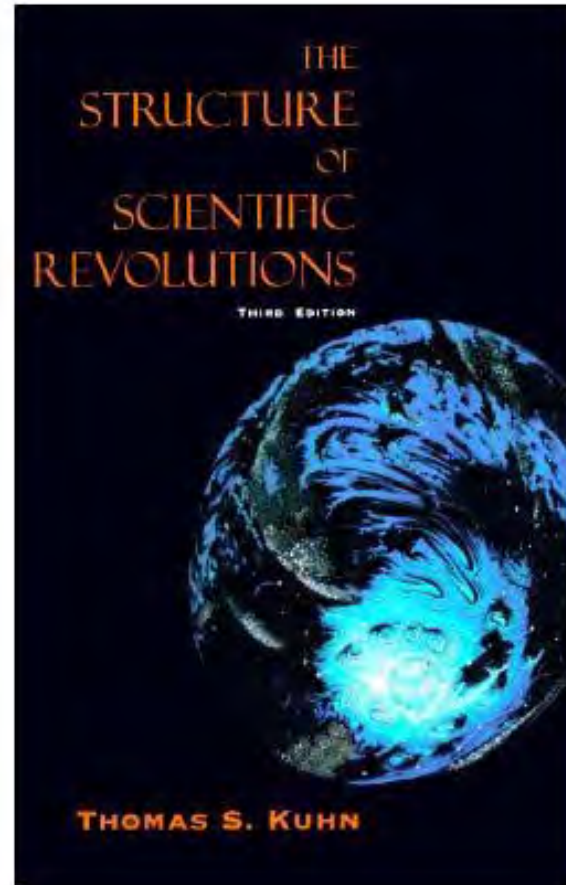
“There would be no debate over DU if there was no military value derived from its use on the battlefield ... Thus the decision to use DU must be made with a full understanding of the consequences of its use, both negative and positive. If these consequences are not presented in a full and forthright manner, a bad decision will be made that costs lives. Since lives are at stake, using the word *evil* to describe the purposeful distortion of facts in appropriate”



Dr. Bernard Rostker

My Scientific Philosophy

- The Structure of Scientific Revolutions by Dr. Thomas S. Kuhn
- “Normal Science”
- Scientific Revolutions occur when sufficient evidence challenges Normal Science



Depleted Uranium is a Safe and Effective Material

- Veterans with embedded fragments
- DU Capstone Study
- Environmental Surveys
- Urine bioassay monitoring of U.S. Troops
- Animal studies to date
- International models are highly conservative



A Final Caution



The End (Probably Not)



Questions?

